AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A discrete dispersion compensation module for substantially compensating for dispersion and dispersion slope at a discrete location in an optical communications network transmitting signals on multiple wavelengths, the dispersion compensation module comprising:

a first dispersion compensating fiber providing dispersion compensation and dispersion slope compensation at the discrete location, said first dispersion compensating fiber having a first non-zero dispersion coefficient and a first non-zero dispersion slope coefficient, a ratio of the first non-zero dispersion coefficient to the first non-zero dispersion slope coefficient being a first dispersion-to-dispersion slope ratio;

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a second dispersion compensating fiber in optical communication with said first dispersion compensating fiber, said second dispersion compensating fiber having a second non-zero dispersion coefficient and a second non-zero dispersion slope coefficient, a ratio of the second non-zero dispersion coefficient to the second non-zero dispersion slope coefficient being a second dispersion-to-dispersion slope ratio,

wherein a length of said first dispersion compensating fiber and a length said second dispersion compensating fiber are selected to compensate dispersion and to compensate dispersion slope simultaneously for the multiple wavelengths at a discrete location along a transmission path of the optical communications network,

wherein the first and second dispersion-to-dispersion slope ratios are greater than a dispersion-to-dispersion slope ratio associated with the transmission path, and

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wherein said first and second dispersion compensating fibers are contained within the discrete dispersion compensating module that is located at a discrete location along the transmission path and between a multiplexer and a demultiplexer of the optical communications network.

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2. (Previously presented) The discrete dispersion compensation module of claim 1 wherein the first non-zero dispersion coefficient is different from the second non-zero dispersion coefficient.

3. (Previously presented) The discrete dispersion compensation module of claim 1 wherein the first non-zero dispersion slope coefficient is different from the second non-zero dispersion slope coefficient.

4. (Previously presented) The discrete dispersion compensation module of claim 1 wherein the transmission path is an inter-network element section of transmission fiber optically coupling the discrete dispersion compensation module and a node of the optical communications network.

5. (Previously presented) The discrete dispersion compensation module of claim 4 wherein the transmission path includes a component in optical communication with the inter-network element section of transmission fiber.

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6. (Canceled)

7. (Previously presented) The discrete dispersion compensation module of claim 1 wherein the transmission path extends between a first terminal and a second terminal to define a terminal-to-terminal path and the discrete dispersion compensation module is optically coupled to the second terminal and between the multiplexer and demultiplexer.

8. (Previously presented) The discrete dispersion compensation module of claim 7 wherein the transmission path includes a component in optical communication with the terminal-to-terminal path.

9. (Canceled)

10. (Previously presented) The discrete dispersion compensation module of claim 1 wherein the length of first dispersion compensating fiber and the length of second dispersion compensating fiber are selected based on a mathematical solution compensating dispersion in the transmission path and compensating dispersion slope in the transmission path.

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11. (Currently amended) The discrete dispersion compensation module of claim 10 wherein the mathematical solution ~~is represented as:~~ minimizes the following terms:

$$D_{trans} * L_{trans} + D_{dcf1} * L_{dcf1} + D_{dcf2} * L_{dcf2}\text{; and} \cancel{=0}$$

$$L_{trans} * S_{trans} + L_{dcf1} * S_{dcf1} + L_{dcf2} * S_{dcf2}, \cancel{=0}$$

where D is dispersion coefficient, L is length and S is dispersion slope coefficient.

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12. (Currently amended) ~~The~~ A discrete dispersion compensation module ~~of claim 11~~ for substantially compensating for dispersion and dispersion slope at a discrete location in an optical communications network transmitting signals on multiple wavelengths, the dispersion compensation module comprising:

a first dispersion compensating fiber providing dispersion compensation and dispersion slope compensation at the discrete location, said first dispersion compensating fiber having a first non-zero dispersion coefficient and a first non-zero dispersion slope coefficient, a ratio of the first non-zero dispersion coefficient to the first non-zero dispersion slope coefficient being a first dispersion-to-dispersion slope ratio;

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a second dispersion compensating fiber in optical communication with said first dispersion compensating fiber, said second dispersion compensating fiber having a second non-zero dispersion coefficient and a second non-zero dispersion slope coefficient, a ratio of the second non-zero dispersion coefficient to the second non-zero dispersion slope coefficient being a second dispersion-to-dispersion slope ratio,

wherein a length of said first dispersion compensating fiber and a length said second dispersion compensating fiber are selected to compensate dispersion and to compensate dispersion slope simultaneously for the multiple wavelengths at a discrete location along a transmission path of the optical communications network,

wherein the first and second dispersion-to-dispersion slope ratios are greater than a dispersion-to-dispersion slope ratio associated with the transmission path,

wherein said first and second dispersion compensating fibers are contained within the discrete dispersion compensating module that is located at a discrete location along the transmission path and between a multiplexer and a demultiplexer of the optical communications network,

wherein the length of first dispersion compensating fiber and the length of second dispersion compensating fiber are selected based on a mathematical solution compensating dispersion in the transmission path and compensating dispersion slope in the transmission path,

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wherein the mathematical solution minimizes the following terms:

$D_{trans} * L_{trans} + D_{dcf1} * L_{dcf1} + D_{dcf2} * L_{dcf2}$; and

$L_{trans} * S_{trans} + L_{dcf1} * S_{dcf1} + L_{dcf2} * S_{dcf2}$,

where D is dispersion coefficient, L is length and S is dispersion slope coefficient, and

wherein the length of first dispersion compensating fiber and the length of second dispersion compensating fiber are selected based on discrete lengths approximating the mathematical solution.

13. (Previously presented) The discrete dispersion compensation module of claim 10 wherein the mathematical solution compensates for Nth order dispersion effects in the transmission path, where N is greater than 2,

said discrete dispersion compensation module further comprising and containing N dispersion compensating fibers, including said first and second dispersion compensating fibers, in optical communication with each other, each of said N dispersion compensating fiber having a non-zero dispersion coefficient and a non-zero dispersion slope coefficient, wherein respective lengths of said N dispersion compensating fibers are selected to compensate 1^{st} through N^{th} order dispersion effects for the multiple wavelengths in the transmission path.

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14. (Previously presented) The discrete dispersion compensation module of claim 10 wherein the mathematical solution includes a value representing dispersion introduced by components in the transmission path.

15. (Previously presented) The discrete dispersion compensation module of claim 10 wherein the mathematical solution includes a value representing dispersion slope introduced by components in the transmission path.

16. (Currently amended) A method for compensating dispersion in an optical communications network transmitting signals on multiple wavelengths using a discrete dispersion compensation module, the method comprising:

providing a first dispersion compensating fiber having a first non-zero dispersion compensation and first non-zero dispersion slope compensation in the discrete dispersion compensation module, a ratio of the first non-zero dispersion coefficient to the first non-zero dispersion slope coefficient being a first dispersion-to-dispersion slope ratio;

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providing a second dispersion compensating fiber having a second non-zero dispersion compensation and second non-zero dispersion slope compensation in the discrete dispersion compensation module, a ratio of the second non-zero dispersion coefficient to the second non-zero dispersion slope coefficient being a second dispersion-to-dispersion slope ratio; and

optically coupling the discrete dispersion compensation module to a transmission path of the optical communications network between a multiplexer and demultiplexer of the optical communicating network;

said first non-zero dispersion compensation, first non-zero dispersion slope compensation, second non-zero dispersion

compensation and second non-zero dispersion slope compensation selected to compensate dispersion and compensate dispersion slope simultaneously, for the multiple wavelengths in a transmission path, wherein the first and second dispersion-to-dispersion slope ratios are greater than a dispersion-to-dispersion slope ratio associated with the transmission path.

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17. (Original) The method of claim 16 wherein the first non-zero dispersion compensation is different from the second non-zero dispersion compensation.

18. (Original) The method of claim 16 wherein the first non-zero dispersion slope compensation is different from the second non-zero dispersion slope compensation.

19. (Previously presented) The method of claim 16 wherein the transmission path is an inter-network element section of transmission fiber optically coupling the discrete dispersion compensation module and a node of the optical communications network.

20. (Original) The method of claim 19 wherein the transmission path includes a component in optical communication with the inter-network element section of transmission fiber.

21. (Previously presented) The method of claim 16 wherein the transmission path extends between a first terminal and a second terminal to define a terminal-to-terminal path, said optically coupling step optically coupling the dispersion compensation module to the second terminal and between the multiplexer and demultiplexer.

22. (Original) The method of claim 21 wherein the transmission path includes a component in optical communication with the terminal-to-terminal path.

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23. (Original) The method of claim 16 wherein the first non-zero dispersion compensation, first non-zero dispersion slope compensation, second non-zero dispersion compensation and second non-zero dispersion slope compensation are selected based on a mathematical solution compensating dispersion in the transmission path and compensating dispersion slope in the transmission path.

24. (Currently amended) The method of claim 23 wherein the mathematical solution ~~is represented as:~~ minimizes the following terms:

$$D_{trans} * L_{trans} + D_{dcf1} * L_{dcf1} + D_{dcf2} * L_{dcf2}; \text{ and } \cancel{= 0}$$

$$L_{trans} * S_{trans} + L_{dcf1} * S_{dcf1} + L_{dcf2} * S_{dcf2}, \cancel{=0}$$

where D is dispersion coefficient, L is length and S is dispersion slope coefficient.

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25. (Currently amended) ~~The~~ A method ~~of claim 23~~ for compensating dispersion in an optical communications network transmitting signals on multiple wavelengths using a discrete dispersion compensation module, the method comprising:

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providing a first dispersion compensating fiber having a first non-zero dispersion compensation and first non-zero dispersion slope compensation in the discrete dispersion compensation module, a ratio of the first non-zero dispersion coefficient to the first non-zero dispersion slope coefficient being a first dispersion-to-dispersion slope ratio;

providing a second dispersion compensating fiber having a second non-zero dispersion compensation and second non-zero dispersion slope compensation in the discrete dispersion compensation module, a ratio of the second non-zero dispersion coefficient to the second non-zero dispersion slope coefficient being a second dispersion-to-dispersion slope ratio; and

optically coupling the discrete dispersion compensation module to a transmission path of the optical communications

network between a multiplexer and demultiplexer of the optical communicating network;

said first non-zero dispersion compensation, first non-zero dispersion slope compensation, second non-zero dispersion compensation and second non-zero dispersion slope compensation selected to compensate dispersion and compensate dispersion slope simultaneously for the multiple wavelengths in a transmission path, wherein the first and second dispersion-to-dispersion slope ratios are greater than a dispersion-to-dispersion slope ratio associated with the transmission path

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wherein the first non-zero dispersion compensation, first non-zero dispersion slope compensation, second non-zero dispersion compensation and second non-zero dispersion slope compensation are selected based on a mathematical solution compensating dispersion in the transmission path and compensating dispersion slope in the transmission path,

wherein the mathematical solution minimizes the following terms:

$D_{trans} * L_{trans} + D_{dcf1} * L_{dcf1} + D_{dcf2} * L_{dcf2}$; and

$L_{trans} * S_{trans} + L_{dcf1} * S_{dcf1} + L_{dcf2} * S_{dcf2}$,

where D is dispersion coefficient, L is length and S is dispersion slope coefficient, and

wherein the first non-zero dispersion compensation, first non-zero dispersion slope compensation, second non-zero dispersion compensation and second non-zero dispersion slope compensation are selected based on discrete lengths approximating the mathematical solution.

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26. (Previously presented) The method of claim 23 wherein the mathematical solution compensates for Nth order dispersion effects in the transmission path, where N is greater than 2, said providing steps providing N dispersion compensating fibers having non-zero dispersion compensation and non-zero dispersion slope compensation in the discrete dispersion compensation module, wherein the dispersion compensating fibers are selected to compensate 1^{st} through N^{th} order dispersion effects for the multiple wavelengths in the transmission path.

27. (Original) The method of claim 23 wherein the mathematical solution includes a value representing dispersion introduced by components in the transmission path.

28. (Original) The method of claim 23 wherein the mathematical solution includes a value representing dispersion slope introduced by components in the transmission path.

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29. (New) The discrete dispersion compensation module of claim 1, wherein the first and second dispersion-to-dispersion slope ratios are positive.

30. (New) The method of claim 16, wherein the first and second dispersion-to-dispersion slope ratios are positive.